



$$\textcircled{1} \quad 77 = x^2 + y^2$$

$$\textcircled{2} \quad 51 = x^2 + y^2 - 4x - 6y$$

$$\textcircled{3} \quad x^2 + y^2 - 4x - 6y - 51 = 0$$

$$\textcircled{4} \quad (x - \underline{\underline{2}})^2 + (y - \underline{\underline{3}})^2 = 64$$

$$(x-2)^2 = x^2 - 4x + 4$$
$$(x-2)(x-2)$$

$$(x-2)^2 + (y-3)^2 = 64$$

$$(1-2)^2 + (y-3)^2 = 64$$

$$1 + (y-3)^2 = 64$$

$$(y-3)^2 = 63$$

$$y-3 = \pm\sqrt{63}$$

$$y = 3 + \sqrt{63} \text{ or } 3 - \sqrt{63}$$

$$x^2 = 25$$

$$x = \pm \sqrt{25}$$

$$x = \pm 5$$

$$C(\overset{\text{1}}{0}, \overset{\text{1}}{0}) \quad r = \sqrt{5}$$

$$x^2 + y^2 = 5$$

$$(2\sqrt{2})^2 = 8$$

$$C(-3, 4) \quad r = 2\sqrt{2}$$

$$x^2 + y^2 + 6x - 8y = -17$$

$$(x+3)^2 + (y-4)^2 = 8$$

$(h, k)$        $r = \text{radius}$

$$(x-h)^2 + (y-k)^2 = r^2$$

$C(h, k)$

$r = \text{radius}$

$C(0,0)$   $r = \text{radius}$

$$r^2 = x^2 + y^2$$



$$(x+3)^2 + (y+4)^2 = 16$$

$$C(-3, -4)$$

$$r = 4$$

$$x^2 + (y - z)^2 = 98$$

$$C(0, z)$$

approx.

$$r = \underline{7\sqrt{2}}$$

$$\underline{\sqrt{98}}$$

$$9.89$$

..  
' X

$$x^2 + y^2 + 4x + 6y = 2$$

C( )      r = ?